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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,791	06/24/2003	William Leon Rugg	STL10987	1683
7590	06/07/2006		EXAMINER	
Dereck J. Berger Seagate Technology LLC Intellectual Property - COL2LGL 389 Disc Drive Longmont, CO 80503			WATKO, JULIE ANNE	
			ART UNIT	PAPER NUMBER
			2627	
			DATE MAILED: 06/07/2006	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/602,791	RUGG ET AL.	
	Examiner	Art Unit	
	Julie Anne Watko	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 01 May 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-6,8-13,16 and 20 is/are rejected.
- 7) Claim(s) 7,14,15 and 17-19 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-2, 4-5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sega et al (EP 760510) in view of Crane, Jr. et al (US Pat. No. 6797882 B1).

See statement of rejection in the office action mailed February 1, 2006.

3. Claims 3 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sega et al (EP 760510) in view of Crane, Jr. et al (US Pat. No. 6797882 B1) as applied to claims 1-2, 4-5 and 8 above, and further in view of Koo et al (US Pat. No. 6243262).

See statement of rejection in the office action mailed February 1, 2006.

4. Claims 6 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sega et al (EP 760510) in view of Crane, Jr. et al (US Pat. No. 6797882 B1) as applied to claims 1-2, 4-5 and 8 above, and further in view of Bennett (US Pat. No. 6388834 B1).

See statement of rejection in the office action mailed February 1, 2006.

5. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett (US Pat. No. 6388834 B1) in view of Crane, Jr. et al (US Pat. No. 6797882 B1).

See statement of rejection in the office action mailed February 1, 2006.

Allowable Subject Matter

6. Claims 7, 14-15 and 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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7. See reasons for indicating allowable subject matter stated in the office action mailed

February 1, 2006.

Response to Arguments

8. Applicant's arguments filed May 1, 2006, have been fully considered but they are not persuasive.

On page 6, 2nd to last paragraph, Applicant states that "Claim 1 recites, among other limitations, 'a flex printed circuit board assembly.' The Office action notes on page 2 that the EP document does not disclose a flex printed circuit board. To remedy this critical deficiency, the Office points to Crane as purportedly teaching substituting a flexible printed circuit board for the presumably rigid board disclosed by the EP document."

On page 6, last paragraph, Applicant further states that "the Office has failed to disclose elimination of a printed circuit board within a disc drive. In particular, given that the printed circuit board mentioned by Crane has no particular structure, it is clear that Crane in no way envisioned replacement of the EP document's rigid printed circuit board, having actuator and motor electronic control components thereon, with a flexible printed circuit board".

The Examiner has considered this argument thoroughly and asserts that Crane explicitly teaches the replacement of a rigid printed circuit board, having electronic components thereon, with a flexible printed circuit board. In col. 9, lines 56-58, Crane, Jr. et al explicitly state (emphasis added) that "The stiffened portion of the flexible circuit board 800 can thus **replace** the printed circuit board described above." In col. 9, lines 49-52, Crane, Jr. et al recite (emphasis added) the particular structure that "The printed circuit board may include one or more active and/or passive **circuit elements**, such as a microprocessor, digital signal processor, or **other**

electronic components." Thus, Crane, Jr. et al explicitly teach that a rigid printed circuit board, having electronic components thereon, is replaced by a stiffened portion of a flexible printed circuit board. Furthermore, this teaching is applicable to the printed circuit board of Sega et al insofar as the printed circuit board of Sega et al is a rigid printed circuit board having electronic components thereon.

Additionally, the claims are written in open language, so that "elimination of a printed circuit board within a disc drive" is not required by the claim. This argument is moot, however, in view of the fact that Crane, Jr. et al explicitly teach that a rigid printed circuit board can be replaced by a stiffened portion of a flexible printed circuit board.

On page 7, Applicant further argues that "even if one were to accept the Office's suggestion that it was known that one could so modify the drive of the EP document, the Office has utterly failed to provide a motivation for doing so. While it is baldly asserted that doing so 'in order to simplify assembly by eliminating a connection step' is 'notoriously well-known in the art', the Office has not produced a shred of evidence to support this claim. Crane, in fact makes no mention that doing so is well-known or that any particular benefit is thereby achieved."

The Examiner has considered this argument thoroughly and agrees that Crane, Jr. et al does not explicitly disclose the stated motivation for making the replacement taught by Crane, Jr. et al. This one reference is not the only acceptable resource for motivation. The following is a quotation (emphasis added) from MPEP 2144:

2144 Sources of Rationale Supporting a Rejection Under 35 U.S.C. 103
RATIONALE MAY BE IN A REFERENCE, OR REASONED FROM
COMMON KNOWLEDGE IN THE ART, SCIENTIFIC PRINCIPLES, ART-
RECOGNIZED EQUIVALENTS, OR LEGAL PRECEDENT

The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the

prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) (setting forth test for implicit teachings); *In re Eli Lilly & Co.*, 902 F.2d 943, 14 USPQ2d 1741 (Fed. Cir. 1990) (discussion of reliance on legal precedent); *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988) (references do not have to explicitly suggest combining teachings); *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985) (examiner must present convincing line of reasoning supporting rejection); and *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993) (reliance on logic and sound scientific reasoning).

THE EXPECTATION OF SOME ADVANTAGE IS THE STRONGEST RATIONALE FOR COMBINING REFERENCES

The strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. *In re Sernaker*, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (Fed. Cir. 1983).

The Examiner has presented a rationale based upon reasoning from knowledge generally available to one of ordinary skill in the art.

Electrical connections can be made in a variety of ways, many of them destructive.

Soldering involves the application of heat, which can destroy some thermally sensitive electronic components. See, e.g., Crane, Jr. et al, col. 9, lines 41-49. Pin connectors have a plurality of drawbacks. Pin terminals “are subject to damage during normal handling”, which “renders the electrical connector useless, and repair of the electrical connector (if possible) is time consuming and costly”, resulting in costly replacement of otherwise undamaged parts. See, e.g., Greenside et al (US Pat. No. 6315584 B1), col. 1, lines 34-46. Pin connectors also collect dust, resulting in loss of electrical contact, diminishing overall quality of electronic devices. See Greenside et al, col. 1, lines 47-58. Pin connectors further subject printed circuit boards to electrostatic discharge (ESD), which can damage sensitive electronics, leading to time consuming and costly repairs, or

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costly replacement of the circuit boards. See Greenside et al, col. 1, line 59-col. 2, line 5.

Damage resulting from solder connection steps or pin connection steps can reduce yields in the assembly process. Reduced yields lead to increased marginal costs per device, and less profit on the sale of each device at market price.

In order to achieve higher profit, it is desirable to eliminate the connection step, with all its destructive effects notoriously well known in the disk drive art (and disclosed by Crane, Jr. et al and Greenside et al).

Furthermore, legal precedent established by prior case law supports the Examiner's obviousness argument. There is no invention in integrating parts which were formerly separately formed but joined together, nor in separately forming and joining parts which were formerly integrally formed. Absent unexpected results due to the claimed integration or separation, and absent any evidence that the integration or separation was beyond the level of ordinary skill in the art, such changes are merely a matter of obvious design choice and engineering choice. See *In re Fridolph* 135 USPQ 319 (CCPA 1962). See also *In re Larson*, 114 USPQ 347 (CCPA 1965).

On page 7, 2nd paragraph, Applicant argues that "it is clear that the Office has merely used the present application as a road map for cobbling together these disparate references solely for the purposes of rejecting the present claims." In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include

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knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Because the references relied upon are prior art, the *prima facie* obviousness rejection is proper.

The Examiner's arguments above apply also to rebut Applicant's similar arguments with respect to claims 3 and 9-11, claims 6, 12 and 13, and claims 16 and 20.

Because Applicant's arguments are not persuasive, the rejection is maintained.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR

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system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie Anne Watko whose telephone number is (571) 272-7597. The examiner can normally be reached on Monday through Thursday, noon to 10PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on (571) 272-7023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Julie Anne Watko, J.D.

Primary Examiner

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June 5, 2006

JAW

A handwritten signature in black ink, appearing to read "JULIE ANNE WATKO". It is written in a cursive style with a long horizontal stroke extending to the right.